

**REMARKS**

**Summary of the Office Action and Responses:**

In the present application, claims 1-20 are pending and stand rejected.

**Claim rejections under 35 U.S.C. §103(a) and Response:**

Claims 17 and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Villa-Real, U.S. Patent No. 4,320,767 (Villa-Real) in view of Myllymäki, U.S. Patent No. 5,670,944 (Myllymäki). In response, Applicant respectfully traverses the Examiner's rejections.

The Examiner reasons that Villa-Real teaches a mobile client device comprising a palm-sized body, a means to generate a heart rate of user, and heart rate circuitry, which requires the user to press the device against the arm to be used. Further, the Examiner reasons that Villa does not teach the device having a plurality of sensors on the outside of the device. Additionally, the Examiner reasons that Myllymäki teaches a mobile client device comprising a plurality of sensors to sense and output blood flow data of a user holding the device with sensors disposed on a plurality of locations on the device, and a means coupled to the sensors for inferring a holding pattern (determining which sensors have valid output), and generating a hear rate of the user using a subset of the data output by the sensors, based on the holding pattern, that is compensating for false data.

In general the present invention is directed towards mobile client devices, such as wireless mobile phones or palm sized personal digital assistants provided with a

number of sensors and companion programming instructions/circuitry to generate a heart rate reading for a user holding the device. Accordingly, amended independent claim 17 filed with Applicant's previous response recites in pertinent part the following:

**a plurality of sensors to sense and output blood flow rate data of a user holding the mobile client device with one of the user's hands, with the sensors being distributively disposed at a plurality of locations of the palm-sized body to facilitate having at least a subset of said sensors to be in contact with the holder user's holding hand; and**

**means disposed within said palm-sized body and coupled to the sensors to infer a manner the mobile client device is being held by one of the user's hands, and to generate a heart rate of the user using a subset of the blood flow rate data output by said sensors, based at least in part on the inferred hand holding manner.**

Independent claims 1 and 9 recite similar limitations. As a result, the mobile client device is **held by one of the user's hands; a subset of the sensors contact with the user's holding hand; a hand holding pattern is inferred, and the inferred holding pattern is used (exclusively or with other factors) to assist in determining the user's heart rate.**

In contrast, Villa-Real teaches a pocket-sized electronic cuffless blood pressure and pulse rate calculator that is required to be compressed onto a brachial artery of the arms or legs during measurement. (See Abstract, col. 14, lines 35-40, and col. 17, lines 12-19) Further, the Examiner states in the present Office Action that "Villa-Real teaches heart rate circuitry which **requires the user to press the device against the arm to be used.**" (Emphasis added) (See Office Action, page 2). Applicant cannot find any disclosure in Villa-Real that can be read as teaching or suggesting the limitations of the mobile client device is **held by one of the user's hands; a subset of the sensors contact with the user's holding hand; a hand holding pattern is inferred, and the**

**inferred holding pattern is used (exclusively or with other factors) to assist in determining the user's heart rate, as claimed in the present invention.**

Additionally, as discussed in Applicant's previous response, Myllymäki does not teach or suggest the limitations of the mobile client device is **held by one of the user's hands; a subset of the sensors contact with the user's holding hand; a hand holding pattern is inferred, and the inferred holding pattern is used (exclusively or with other factors) to assist in determining the user's heart rate**, as claimed in the present invention. Accordingly, Myllymäki does not cure the deficiencies of Villa-Real.

Thus, for the record, Applicant respectfully asserts that Villa-Real in view of Myllymäki does not teach or suggest the limitations of the mobile client device is **held by one of the user's hands; a subset of the sensors contact with the user's holding hand; a hand holding pattern is inferred, and the inferred holding pattern is used (exclusively or with other factors) to assist in determining the user's heart rate**. Further, as discussed above, Villa-Real teaches away from the present invention.

Nevertheless, in order for prosecutorial expediency, Applicant offers to further amend independent claims 1, 9, and 17 to further define the invention. Accordingly, upon entry, amended independent claim 17 recites in pertinent part the following:

**a plurality of sensors to sense and output blood flow rate data of a user holding the mobile client device with one of the user's hands, with the sensors being distributively disposed at a plurality of locations of the palm-sized body to facilitate having at least a subset of said sensors to be in contact with the holder user's holding hand including at least one of the holding hand's finger and palm; and**

**means disposed within said palm-sized body and coupled to the sensors to infer a manner the mobile client device is being held by one of the user's hands, as characterized by the sensor contact configuration of the holding hand's finger/palm, and to generate a heart rate of the user using a subset of the blood flow**

rate data output by said sensors, based at least in part on the inferred hand holding manner **characterized by the sensor contact configuration of the holding hand's finger/palm.**

Similarly, upon entry, amended independent claims 1 and 9 recite similar limitations. As a result, the limitations of **a user holding the mobile client device with one of the user's hands**, with the sensors being distributively disposed at **a plurality of locations of the palm-sized body to facilitate having at least a subset of said sensors to be in contact with the holder user's holding hand including at least one of the holding hand's finger and palm**, means disposed within said palm-sized body and coupled to the sensors to infer a manner the mobile client device is being held by one of the user's hands, as characterized by the sensor contact configuration of the holding hand's finger/palm, and to generate a heart rate of the user using a subset of the blood flow rate data output by said sensors, based at least in part on the inferred hand holding manner **characterized by the sensor contact configuration of the holding hand's finger/palm** are recited in independent claims 1 and 9.

All offered amendments are fully supported by the original disclosure, see e.g. in the Specification, page 5, lines 14-26. No new matters will be introduced.

Thus, even if for arguendo that Villa-Real did teach or suggest the limitations as the Examiner reasoned, Applicant respectfully asserts that Villa-Real does not teach or suggest the limitations of **a user holding the mobile client device with one of the user's hands**, with the sensors being distributively disposed at **a plurality of locations of the palm-sized body to facilitate having at least a subset of said sensors to be in contact with the holder user's holding hand including at least one of the**

**holding hand's finger and palm, means disposed within said palm-sized body and coupled to the sensors to infer a manner the mobile client device is being held by one of the user's hands, as characterized by the sensor contact configuration of the holding hand's finger/palm, and to generate a heart rate of the user using a subset of the blood flow rate data output by said sensors, based at least in part on the inferred hand holding manner characterized by the sensor contact configuration of the holding hand's finger/palm as claimed in the present invention.** As previously discussed, Applicant continues to assert that Myllymäki does not cure the deficiencies of Villa-Real.

Thus, for at least the reasons set forth above, the present invention is not taught or suggested by Villa-Real in view of Myllymäki and is patentable over the references. Accordingly, amended independent claims 1 and 9 are also patentable over the cited references.

Claims 2-8, 10-16, and 18-20 depend from amended independent claim 1, 9, and 17 incorporating their limitations. Thus, by virtue of at least their dependency on amended claims 1, 9, and 17, claims 2-8, 10-16, and 18-20 are patentable over Villa-Real in view of Myllymäki. In addition, claims 2-8, 10-16, and 18-20 include numerous limitations that render these claims further patentable over Villa-Real in view of Myllymäki.

Claims 19 and 20 were rejected as being unpatentable over Villa-Real in view of Myllymäki and in view of Righter et al, U.S. Patent No. 4,938,228 (Righter). In response Applicant respectfully traverses the Examiner's rejections.

As discussed in the aforementioned discussion regarding Villa-Real and Myllymäki and the discussion regarding Myllymäki in view of Righter in Applicant's previous response, Applicant respectfully asserts that Righter does not cure the deficiencies of Villa-Real and/or Myllymäki. Thus, for at least their dependency on amended claim 17, and the reasons set forth above with respect to Villa-Real, Myllymäki, and discussion of Righter in Applicant's previous response, claims 19 and 20 are patentable over Villa-Real, Myllymäki, even when they are further combined with Righter.

Claims 1-3, 7, and 8 were rejected as being unpatentable over Villa-Real in view of Myllymäki and in view of Gaukel, U.S. Patent No. 6,100,806 (Gaukel). In response, Applicant respectfully traverses the Examiner's rejections. As discussed in the aforementioned discussion regarding Villa-Real and Myllymäki and the discussion regarding Myllymäki in view of Gaukel in Applicant's previous response, Applicant respectfully asserts that Gaukel does not cure the deficiencies of Villa-Real and/or Myllymäki. Thus, for at least the reasons set forth above with respect to Villa-Real, Myllymäki, and the discussion of Gaukel in Applicant's previous response, amended claim 1 is still patentable even when Villa-Real and Myllymäki are further combined with Gaukel.

For at least their dependency on amended claim 1, and the same reasons, claims 2, 3, 7, and 8 are also patentable over Villa-Real, Myllymäki and Gaukel combined.

Claims 4 and 5 were rejected as being unpatentable over Villa-Real in view of Myllymäki and in view of Gaukel and in view of Righter. In response, Applicant

respectfully traverses the Examiner's rejections. As discussed in the aforementioned discussion regarding Villa-Real and Myllymäki and the discussion regarding Gaukel in view of Myllymäki and in view of Righter in Applicant's previous response, Applicant respectfully asserts that Gaukel and/or Righter does not cure the deficiencies of Villa-Real and/or Myllymäki. Thus, for at least their dependencies on amended claim 1, and the reasons set forth above with respect to Villa-Real, Myllymäki, and the discussion regarding Gaukel in view of Myllymäki and in view of Righter in Applicant's previous response, claims 4 and 5 are still patentable even when Villa-Real, Myllymäki, and Gaukel are further combined with Righter.

Claim 6 was rejected as being unpatentable over Villa-Real in view of Myllymäki and in view of Gaukel and in view of Matthews, U.S. Patent No. 4,867,442 (Matthews). In response, Applicant respectfully traverses the Examiner's rejections. As discussed in the aforementioned discussion regarding Villa-Real and Myllymäki and the discussion regarding Gaukel in view of Myllymäki and in view of Matthews in Applicant's previous response, Applicant respectfully asserts that Gaukel and/or Matthews does not cure the deficiencies of Villa-Real and/or Myllymäki. Thus, for at least its dependency on amended claim 1, and the reasons set forth above with respect to Villa-Real, Myllymäki, and the discussion regarding Gaukel in view of Myllymäki and in view of Matthews in Applicant's previous response, claim 6 is still patentable even when Villa-Real, Myllymäki, and Gaukel are further combined with Matthews.

Claims 9-11, 15, and 16 were rejected as being unpatentable over Villa-Real in view of Myllymäki and in view of Licher et al., U.S. Patent No. 5,827,179 (Licher). In response, Applicant respectfully traverses the Examiner's rejections. As discussed in

the aforementioned discussion regarding Villa-Real and Myllymäki and the discussion regarding Licher in view of Myllymäki in Applicant's previous response, Applicant respectfully asserts that Licher does not cure the deficiencies of Villa-Real and/or Myllymäki. Thus, for at least the reasons set forth above with respect to Villa-Real, Myllymäki, and the discussion regarding Licher in view of Myllymäki in Applicant's previous response, amended claim 9 is still patentable even when Villa-Real, Myllymäki are further combined with Licher.

For at least their dependency on amended claim 9, and the same reasons, claims 10, 11, 15 and 16 are also patentable over Villa-Real, Myllymäki and Licher combined.

Claims 12 and 13 were rejected as being unpatentable over Villa-Real in view of Myllymäki and in view of Licher and further in view of Righter. In response, Applicant respectfully traverses the Examiner's rejections. As discussed in the aforementioned discussion regarding Villa-Real and Myllymäki and the discussion regarding Licher in view of Myllymäki and in view of Righter in Applicant's previous response, Applicant respectfully asserts that Licher and/or Righter does not cure the deficiencies of Villa-Real and/or Myllymäki. Thus, for at least their dependency on amended claim 9, and the reasons set forth above with respect to Villa-Real, Myllymäki, and the discussion regarding Licher in view of Myllymäki and in view of Righter in Applicant's previous response, claims 12 and 13 are patentable over Villa-Real, Myllymäki, and Licher even when they are further combined with Righter.

Claim 14 was rejected as being unpatentable over Villa-Real in view of Myllymäki and in view of Licher and in view of Matthews. In response, Applicant respectfully

traverses the Examiner's rejections. As discussed in the aforementioned discussion regarding Villa-Real and Myllymäki and the discussion regarding Licherter in view of Myllymäki and in view of Matthews in Applicant's previous response, Applicant respectfully asserts that Licherter and/or Matthews does not cure the deficiencies of Villa-Real and/or Myllymäki. Thus, for at least claim 14's dependency on amended claim 9, and the reasons set forth above with respect to Villa-Real, Myllymäki, and the discussion regarding Licherter in view of Myllymäki and in view of Righter in Applicant's previous response, claim 14 is patentable over Villa-Real, Myllymäki and Licherter even when they are further combined with Matthews.

**Conclusion:**

In view of the forgoing, Applicant respectfully submits that the offered amendments place all claim 1-20 in condition for allowance, and do not introduce new matters. Further, the offered amendments were "necessitated" by the Examiner's new grounds of rejections (to expedite conclusion of prosecution). Thus, Applicant respectfully requests entry of the offered amendment, and allowance of claims 1-20. Early issuance of the Notice of Allowance is respectfully requested.

Attached hereto is a marked-up version of the changes made to the claims by the current proposed amendments. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**".

The Commissioner is hereby authorized to charge shortages or credit overpayments to Deposit Account No. 501569. A Fee Transmittal is enclosed in duplicate for fee processing purposes.

Respectfully submitted,  
COLUMBIA IP LAW GROUP, PC

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Robert H. Chang  
Registration No. 48,765

10260 SW Greenburg Road, Suite 820  
Portland, Oregon 97223  
Telephone: 503-595-2800

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**In the Claims:**

Claims 1, 9, and 17 have been amended as follows:

1. (Twice Amended) A wireless mobile phone comprising:

a palm-sized body;

a transceiver for transmitting and receiving signals, disposed inside said palm-sized body;

a plurality of sensors to sense and output blood flow rate data of a user holding the wireless mobile phone with one of the user's hands, with the sensors being distributively disposed at a plurality of locations of the palm-sized body to facilitate having at least a subset of said sensors to contact the holder user's holding hand including at least one of the holding hand's finger and palm; and

means disposed within said palm-sized body and coupled to the sensors to infer a manner the wireless mobile phone is being held by one of the user's hands, as characterized by the sensor contact configuration of the holding hand's finger/palm, and to generate a heart rate of the user using a subset of the blood flow rate data output by said sensors, based at least in part on the inferred hand holding manner characterized by the sensor contact configuration of the holding hand's finger/palm.

9. (Twice Amended) A personal digital assistant (PDA) comprising:

a palm-sized body;

memory disposed within said palm-sized body;

a processor disposed with said palm-sized body and coupled to the memory;  
a plurality of sensors to sense and output blood flow rate data of a user holding  
the PDA with one of the user's hands, with the sensors being distributively disposed at  
a plurality of locations of the palm-sized body to facilitate having at least a subset of  
said sensors to contact the holder user's holding hand including at least one of the  
holding hand's finger and palm; and

means disposed within said palm-sized body and coupled to the sensors to infer  
a manner of the PDA is being held by one of the user's hand, as characterized by the  
sensor contact configuration of the holding hand's finger/palm, and to generate a heart  
rate of the user using a subset of the blood flow rate data output by said sensors, based  
at least in part on the inferred hand holding manner characterized by the holding hand's  
finger/palm configuration characterized by the sensor contact configuration of the  
holding hand's finger/palm.

17. (Twice Amended) A mobile client device comprising:

a palm-sized body;  
a plurality of sensors to sense and output blood flow rate data of a user holding  
the mobile client device with one of the user's hands, with the sensors being  
distributively disposed at a plurality of locations of the palm-sized body to facilitate  
having at least a subset of said sensors to be in contact with the holder user's holding  
hand including at least one of the holding hand's finger and palm; and

means disposed within said palm-sized body and coupled to the sensors to infer  
a manner the mobile client device is being held by one of the user's hands, as

characterized by the sensor contact configuration of the holding hand's finger/palm, and to generate a heart rate of the user using a subset of the blood flow rate data output by said sensors, based at least in part on the inferred hand holding manner characterized by the sensor contact configuration of the holding hand's finger/palm.